Hepatitis C virus infection among diabetic patients in Al-Anbar Governorate

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Abstract:

Background: Many workers described the prevalence of anti-HCV among selected populations in Iraq. No study among diabetic patients was reported.

Objective: This study was carried out to study the prevalence of HCV infection among diabetics in Ai-Anbar governorate.

Materials & Methods: A total of 280 diabetics together with 230 apparently "healthy" subjects were included in this study. A questionnaire form was filled for each diabetic and "healthy" subject. The data requested included demographic data, type of diabetes, and risk factors for exposure to HCV. All participants were screened for anti-HCV.

Results: A significant higher rate of anti-HCV among diabetics (4.6%) was observed than controls (0.8%). Anti-HCV rate was significantly higher among type 2 diabetic patients (6.3%) than type 1 diabetic patient (1.8%). Type 2 diabetic patients with a history of blood transfusion, surgical intervention, frequent hospitalization and frequent injections had significantly higher rate of anti-HCV when compared with those with out such risk factors.

Conclusion: A significant relationship between HCV infection and type 2 diabetes was suggested by this study. Larger prospective studies should include persons at a high risk of both HCV and type 2 diabetes to establish the relationship between these two conditions.

Key words: HCV infection, diabetes mellitus, Al-Anbar governorate

Introduction:

Hepatitis C virus (HCV) infection constitutes a major economic and public health problem in the world [1,2]. Recent epidemiological and clinical studies demonstrated a relationship between HCV and diabetes mellitus and high prevalence of antibody against HCV was noted in diabetic patients [3-6].

In Iraq, many workers described the prevalence of anti-HCV among selected populations [7-10]. No study among diabetic patients was reported. Therefore, this study was carried out to measure the prevalence of HCV infection among diabetic patients in Al-Anbar governorate.

Patients & Methods:

A total of 280 diabetic patients attending the popular clinics in Al-Falluja city, Al-Anbar governorate together with 230 non diabetics subjects (controls) were tested for anti-HCV by a third generation enzyme immunosorbent assay (EIA) and a third generation recombinants immunoblot assay (RIA Ш) for confirmation of presence of HCV antibodies using a commercially available kits for the period 1st Feb. to 1st Dec. 2002.

The age range of diabetics was 20 – 60 years with a mean 36.8 ± 12.4 years and male: female ratio of 1:1.31, while of that controls was 17 – 60 years with a mean of 39 ± 9.6 years with a male: female ratio of 1:1.35.

A questionnaire from was filled for each subject by a direct interview. The data requested included demographic information, type of diabetes and risk factors for HCV infection.

Chi-square, Yate's correction, Odd Ratio (OR) and 95% confidence interval (95%CI) were used to determine the association between prevalence of anti0HCV and independent variables. P value less than 0.05 was considered as statistically significant.

Results:

A significant higher rate of anti-HCV was observed among diabetic patients (4.6%) than controls (0.8%) (P < 0.05). Anti-HCV rate was significantly higher among patients with type 2 patients (6.3%) than type 1 diabetes (1.8%) (P < 0.05). These findings are shown in Table 1.

Table 2 shows the prevalence of anti-HCV among type 2 diabetic patients in relation to risk factors of exposure. There was statistically significant higher prevalence of anti-HCV among patients with history of blood transfusion (OR = 23.8, 95%CI = 3.5 – 83.5), frequent hospitalization (OR = 1.6, 95%CI = 3.1 – 4.9), surgical intervention (OR = 2.9, 95%CI = 3.1 – 9.2) and frequent injections (OR =1.8, 95%CI =3.8 – 7.1).

Table 1 Prevalence of anti-HCV among the studied groups

Group		Anti-HCV positivity	
	No. tested	No. (%)	
Diabetic patients	280	13 (3.6)	
Type 1 diabetes	110	2 (1.8)	
Type 2 diabetes	170	11 (6.3)	
"healthy" controls	230	2 (0.8)	

Table 2 Prevalence of anti-HCV among type 2 diabetic patients in relation to risk factors

	No.	Anti-HCV positivity	
Risk factor	**Tested**	**No. (%)**	OR (95% CI)
Blood transfusion [1]	32	9 (28.1)	23.8 (3.5 – 83.5)
Frequent hospitalization	119	7 (5.8)	1.6 (3.1 – 4.9)
Surgical intervention	82	7 (8.5)	2.9 (3.1 – 9.2)
Frequent injections	40	3 (7.5)	1.8 93.8 – 7.1)

1 Odds of type 2 diabetic patients was being serologically positive if his risk factor is blood transfusion versus the odd of all other risk factors combined

Discussion:

This study revealed significantly higher anti-HCV prevalence among diabetics than "healthy" controls. It is higher than rates previously reported among blood donors from different regions in Iraq [8-10]. This finding is in agreement with other studies [3, 5, 10].

The striking higher prevalence of anti-HCV among type 2 diabetic patients (6.3%) than patients with type 1 diabetic (1.8%) may reflect an association between HCV infection and diabetes. The association between diabetes and HCV infection has only recently posed in the international literature but remains unexplained [4, 12, 13]. The association between HCV infection and type 2 diabetes has been revealed by cross–sectional studies but there is no evidence to conclude that HCV infection causes type 2 diabetes. However, Mehta et al [6] provided preliminary epidemiologic evidence supporting the hypothesis that HCV infection causes. Although most of the evidence supports that HCV infection antedate type 2 diabetes [1, 4, 6], it is, also, possible that persons with diabetes are at increase risk for acquiring HCV infection because of frequent hospital intervention and injections.

The results of this study revealed an increasing frequency of anti-HCV as a function of blood transfusion, which is in agreement with other studies [12, 13]. There was, also, significant association between frequent hospitalization, surgical intervention or frequent injections and increased prevalence of anti-HCV. Paranteral exposure and invasive medical procedure (injection or surgery) were beyond this association [14, 15].

This study suggests a significant relationship between HCV infection and type 2 diabetes. Larger prospective studies should include persons at high risk of both HCV infection and type 2 diabetes to

firmly establish relationship between these two conditions.

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